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A Comparison Of Anti-Collision

Based On Recent Flight Tests, The Author Makes A Preliminary Comparison Of The Merits Of Flash Tube Anti-Collision Lights Vs. Incandescent Ones

By Capt. R. A. Stone

Chairman, ALPA Aircraft Exterior Lighting Committee

The Civil Air Regulations require all large airplanes (12,500 pounds gross weight) to display an approved type anti-collision light and, though not legally required to do so, many small airplanes voluntarily display anti-collision lights.

The anti-collision lights familiar to most pilots employ an incandescent lamp which produces a narrow but intense beam of light which is caused to rotate either by optical or mechanical means throughout the 360 degrees of the aircraft's plane of light. A red filter cover is installed and the net effect observed by the pilot is a bright flashing red light which attracts his attention to the presence of an intruding aircraft. The sole purpose of these anti-collision lights is to make the airplane conspicuous and no attempt is made to define the course or flight path of the aircraft by use of the anti-collision light. Definition of the flight path is the function of position lights mounted on the wings tips and tail of the airplane.

'Red' Factors

The selection of the color red for an anti-collision light is based upon several factors. Red is well established psychologically as a "danger" signal; a red light is distinctively different from starlight and the usual background lighting of a city; red light does not create annoying halation and reflection about the aircraft as it flies through clouds; the Air Line Pilots Association established a policy in 1947 calling for an intense red light on all transport aircraft.

A source of light other than incandescent lamps is the condenser discharge flash tube. Basically these lamps function by storing large amounts of electricity in a condenser and suddenly discharging this energy through a gas-filled tube to produce a very intense, but very short duration flash of light. Pilots are familiar with the sequenced flash tubes used in conjunction with the approach lights at several airports.

At least two manufacturers have developed anti-collision lights based upon flash tubes rather than incandescent lamps. One design employs a series of tubes mounted on the fuselage and discharged in sequence from the stern forward in an attempt to not only make the airplane conspicuous but also define its direction of flight. The other design employs flash tubes discharging at controlled rates so that a pilot observes a different frequency of flash depending if he views the stern, side, or nose of the lighted airplane. This also is an attempt to make the airplane conspicuous and simultaneously define its flight path.

On two occasions members of the ALPA Aircraft Exterior Lighting Committee joined other representatives of the aircraft industry to participate in flight tests, which were a comparison of flash tube anti-collision lights versus various incandescent anti-collision lights. On both occasions the ALPA group concluded that the flash tubes were ineffective and could not be accepted as suitable anti-collision lights.

Recently the manufacturer of one of the flash tube anti-collision lights informed ALPA that his light had been improved sufficiently that he requested an opportunity to once again demonstrate his light to the Aircraft Exterior Lighting Committee.

Test Flight Of October 30

A comparative flight test was arranged by ALPA in Chicago for the night of October 30. The generous cooperation of Grimes Manufacturing Company, Aircraft Danger Light Corporation, and United Air Lines made the program possible. Grimes supplied an aircraft equipped with a standard airline type rotating red incandescent anti-collision light; Danger Light supplied an aircraft equipped with a condenser discharge white flash tube anti-collision light; United Air Lines provided a Convair 340 to transport the observers and also hangar facilities and a conference room.

The group of 29 observers included air line pilots, control tower personnel, and illumination engineers. A briefing session was held to inform everyone of the purpose of the flight and to acquaint them with two lights to be viewed as well as the flight paths to be flown. The lights were examined on the aircraft in the hangar and then the actual flight took place.

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Lights . . .

The two lighted airplanes orbitted between Midway and O'Hare airports at 4,500' altitude which was the top of a very light haze condition. The observing airplane was flown lower than the test airplanes to permit viewing the lights against a dark, partly clouded sky and also flown above the test airplanes to permit viewing the lights against the bright background lights of Chicago. Some flight paths brought the observers within one mile of the test airplanes and other paths separated the airplanes by as much as twenty-five miles. After the flight tests a discussion meeting was held.

Results

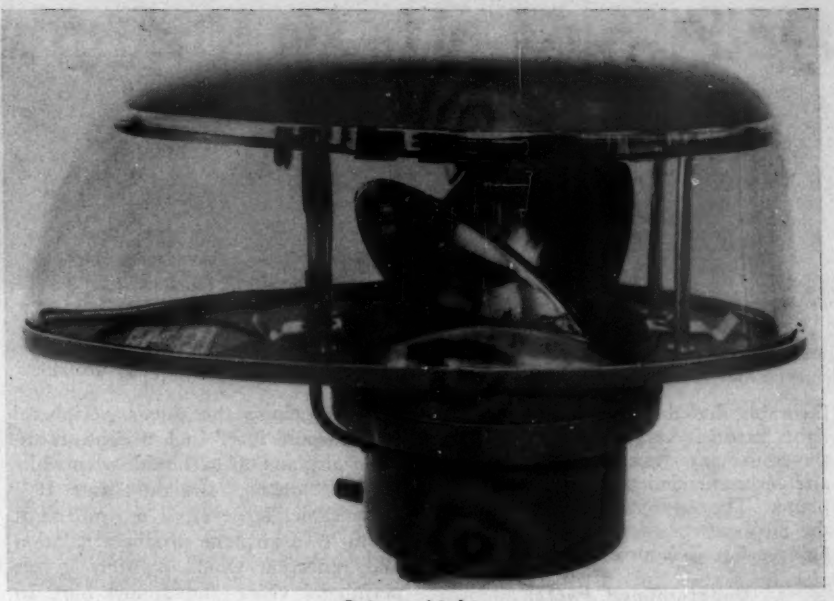
The observers were requested to determine if the anti-collision lights quickly caught their attention and made them aware of the presence of the other airplanes. They were requested to rate each light as being good, fair, or poor.

The white flash tube light was rated as "good" at all distances from 1 to 25 miles in its ability to attract attention and make the airplane conspicuous. The red incandescent light was rated as "fair" both at 25 miles and 15 miles and its rating increased to "fair to good" at the 5-mile range. The observers reported they preferred the white flash tube for making the airplane conspicuous rather than the red incandescent.

Although an anti-collision light is not primarily designed to convey information regarding the aircraft's course or flight path, the observers were requested to rate the lights on their ability to convey such information. The results were that the red incandescent light was rated "poor" at all distances while the white flash tube was rated "fair to good" at 25 miles and "good" when closer than 15 miles. Here again the observers indicated their preference for the white flash tube to define the airplane's flight path rather than the red incandescent.

Discussion

In previous tests the flash tube anti-collision light had failed to make the airplane sufficiently conspicuous but improvements in the electric circuits and reflectors have now produced an effective anti-collision light which emits an intense bluish-white flash of light. The color of the light is distinctive against both a starlit sky and city lights. It is different than other lights seen in flight except some observers questioned its effectiveness in the vicinity of thunderstorms because lightning discharges are in the same region of the color spectrum as the flash tube. This may or may not present a problem.



Grimes Light.

In general it can be stated that the flash tube anti-collision light demonstrated by Aircraft Danger Light Corporation (familiarly known as the Atkins light after the name of its inventor) satisfactorily made the airplane conspicuous and attracted the observers' attention.

'White' Factors

One significant advantage of a white anti-collision light, be it either a flash tube or an incandescent lamp, is that it is visible in the peripheral vision of the human eye. The human eye can "see" a red light only in the foveal area which means that the observer must be looking within approximately twenty degrees of the red light before he can see it. In other words, a pilot will not see a red anti-collision light on an airplane flying along side him unless he turns his head to bring the red light into his foveal range of vision. In contrast, a white light can be seen to the extreme limits of peripheral vision thus enabling a pilot to notice a white light as much as one-hundred degrees to the side while he is "looking" straight ahead.

This ability of the human eye to see a white light in peripheral vision suggests that anti-collision lights should be white to make them most conspicuous but there are other considerations which will be discussed later in this report which raise a doubt if white is the most desirable color.

The observers had rated the white flash tube as "good" for making the airplane conspicuous and also rated it as "fair to good" for determining the track of the airplane but they rated the red incandescent lamp as "poor" for tracking. This may be explained by remembering that the red incandescent lamp emits a constant rate of comparatively long duration flashes while the white flash tube emits its light in one thousandth of a second and the rate of flashing changes from 160 per minute in the forward quadrant to 80 flashes per minute in the side quadrants and to 40 flashes per minute in the stern quadrant.

This display of different flash rates by the condenser discharge lights enables the observer to determine which view he has of the airplane—head-on, side, or stern. A few observers stated that the brief but intense flashes from the flash tube seemed to "paint" a trace across the sky similar to that made by an airplane on a radar scope.

An important side issue of this flight test was that the Grimes airplane was equipped with new improved wing tip lights which were substantially brighter than the usual airline wing tip lights. These lights are commercially available and some airlines are converting to them. The observers commented very

Atkins Light.

favorably that these improved wing tip lights made it very easy to determine the course and attitude of the airplane and recommended their use on all airplanes. The anti-collision light makes the airplane conspicuous; the wing tip lights define its course and attitude.

Undetermined Factor

While the white flash tube anti-collision light was rated as "good" by the observers for making the airplane conspicuous, there was no opportunity to fly the airplane through clouds to determine if the light produced undesirable halation and reflection. In the past, on other test flights, there have been anti-collision lights tested which succeeded very well in making the airplane conspicuous but they produced intolerable halation and reflection when the airplane penetrated a cloud.

Halation results from the anti-collision light illuminating the water droplets which make up the cloud and reflection results from the light rebounding back into the cockpit from these droplets. This condition can be annoying and distracting to the degree that the pilot turns off the anti-collision light. If a pilot turns off the anti-collision light while flying through clouds there is always the possibility that he will neglect to turn it on again when he comes out of the clouds and is exposed to the hazard of VFR traffic. This is particularly dangerous in the vicinity of airports; the light is turned off while the airplane is descending through clouds and then, with the press of other duties, the pilot neglects to turn the light on and he enters a congested traffic pattern around the airport with an unlighted airplane.

Human Eye Capabilities

This brings us back to the capabilities of the human eye and the different color responses found in the foveal and peripheral areas. It was stated before that a white anti-collision light was desirable because the pilot's peripheral vision would "see" such a light on another airplane off to the side even while he was "looking" straight ahead. It is undesirable, however, if a white light on his own airplane produces halation and reflection which registers in his peripheral vision and annoys him. In contrast if the halation and reflection is red, the pilot is "blind" to red in the peripheral areas and he is not annoyed. His foveal vision is protected against the red halation and reflection by strategically locating the anti-collision light on some remote portion of the airplane such as the top of the rudder.

The comments concerning annoying halation and reflection of white lights are generally based upon light from an incandescent source which produces relatively long duration flashes and which has movement such as the rotating type anti-collision light. It is possible that the extremely short duration of flash emitted by a condenser discharge flash tube may not produce annoying halation and reflection but this has not yet been determined by the ALPA Aircraft Exterior Lighting Committee.

It must be pointed out that adverse pilot comment concerning halation and reflection has been previously received relative to the condenser discharge system which employs a series of flash tubes along the fuselage but in that system there is "movement" due to the sequential illumination of the tubes. In any event, all that can be stated now is that testing for halation and reflection must be carried out. Efforts will be made to have an airline airplane equipped with the Aircraft Danger Light to permit evaluation of this problem both by regular airline pilots and the Aircraft Exterior Lighting Committee.

Conclusions

The Civil Aeronautics Board has under consideration amendments to the Civil Air Regulations which, in their original form, would have effectively legislated the flash tube out of consideration for anti-collision light purposes. On the basis of the evaluation described in this report, the Air Line Pilots Association has requested the CAB either to hold in abeyance the amendments pending further testing of flash tubes for halation and reflection or, to promulgate regulations which would not forthwith rule out the use of flash tubes.

At this stage the ALPA Aircraft Exterior Lighting Committee can report that we have witnessed a demonstration of a highly effective flash tube anti-collision light but we have not determined if it does, or does not, produce undesirable halation and reflection. We hope to arrange such a test in the near future and will issue a report of our findings.

Understatement Of The Year

At a recent meeting discussing Aircraft Exterior Lighting, the subject of improved lights on small airplanes was under consideration.

Bill Atkins (NWA), inventor of the Atkins Anti-Collision Light, thought small airplanes needed improved lights because, "if a little 65-horsepower engine comes through your windshield, it's liable to spoil your whole day."

Physical Standards And Air Line Pilots

The Long-Range Goal Of ALPA's Physical Standards Program: Maximizing The Career Potential Of The Air Line Pilot — A 14th Convention Report

By Capt. Harry Orlady, UAL
Chairman, Physical Standards Committee

The Fourteenth Convention, in a series of resolutions, took action to provide ALPA with a realistic and objective medical program and policies relating to such a program.

This program encompasses:

- A delineation of the relationship between pilots and company medical programs.
- A more complete correlation of medical and allied information within the Association.
- Authorization for Research in Human Engineering and related factors.
- Continuation of ALPA's flexible retirement age policies.
- A monitoring of jet operation factors affecting pilot health.

Study And Research

Considerable study and research preceded adoption of this program by the Convention. Very broad studies were carried out by the Physical Standards Committee, a standing committee of the Board of Directors, as well as by the Turbo-Prop and Jet Study Committee which touched on the jet aspects relating to pilots' health.

The Physical Standards Committee was created by the 13th Convention and its members appointed by the Executive Committee in February, 1955. The committee's assignment was to study the entire field of physical problems and recommend a program including: (1) physical standards for pilots; (2) the enforcement and maintenance of such standards; (3) the relationship between company physical programs and the pilot; (4) collective bargaining of the physical standards problem, such recommended program to include model contractual physical provisions as a future collective bargaining guide; (5) recommendation as to what research programs, if any, ALPA should sponsor or foster.

The Committee first met on June 8, 1955, and held numerous other meetings prior to submitting their report to the Convention. In addition to its regular meetings, the Committee actively participated in aero-medical conferences with leading medical authorities, including the Medical Director of the Civil Aeronautics Administration, individual CAA Medical Examiners, and the Air Line Medical Directors Association. Committee members attended aviation medical survey courses at Ohio State University, a symposium on the "Aging Pilot" at Wright Patterson Air Force Base and the annual convention of the Aero-Medical Association. In addition, the Committee interviewed individual interested pilots and ALPA staff members as well as consulting medical advisers such as Dr. William F. Ashe, head of the Department of Preventive Medicine at Ohio State University.

Existing Physical Standards

A thorough study of existing physical standards and requirements was, of course, basic to the entire physical problems survey.

Guided by facts revealed in this study of existing standards, the Committee concluded:

- While isolated inequities may have resulted from the application of present standards and procedures which obviously have some problem areas, they are believed to be adequate with a definite possibility of eventual liberalization in some categories.
- "Waivers" must be an integral part of any rational set of physical standards for pilots.

Reasons For Waivers

The four principal reasons for the necessity of maintaining regulatory flexibility through "waivers" are: (1) It is impossible to precisely determine the cut-off point for any given physical standard; (2) Even if the cut-off point was known it would vary with the individual; (3) Not only can individual doctor's measurement of any specified cut-off point vary, but individual performance can vary from day to day; (4) Individual pilots often compensate for given physical deficiencies in an entirely individual manner.

The Committee's conclusion regarding the adequacy of present standards was based primarily upon the fact, that to their knowledge, no studies or research have ever revealed that any air line accident or air safety incident has been related to the pilot's failure to meet existing physical standards or has indicated that existing standards are too lenient.

Company Medical Departments

The role of company medical departments, the Association's and the pilot's relationships to them, and the scope and objectives of ALPA's medical programs, is an important part of the overall physical standards and medical picture.

Essentially, the Fourteenth Convention recognized and endorsed the desirability of preventive medicine programs which recognize the fundamental right of the individual pilot groups to decide whether or not to participate, and in which participating pilots enjoy protective provisions negotiated into their employment agreements.

During its study, the Physical Standards Committee became convinced that most pilots want a medical facility available to them where they can get periodic check-ups that are as comprehensive as modern medical science can make them in order that potentially

About The Article

The Fourteenth Convention recognized the growing importance of civil aviation medicine and its close relationship to the air line pilot. Consequently, it adopted a series of resolutions to give ALPA positive physical standards programs and guiding policies. The Physical Standards Committee spent 18 months in study and research prior to submitting its recommendations to the Board of Directors. Members of the Physical Standards Committee were: H. W. Orlady (UAL), Chairman; L. C. Transou (EAL); C. A. Ecklund (NWA); and W. A. Murphy (TWA). This article, by the Committee Chairman, outlines the specific actions taken by the Convention and some of the highlights of the Committee's study upon which these actions were based.

disqualifying defects can be discovered and treated before they become serious problems. We also believe that the licensing (including disqualification) function has been very properly placed in the hands of the Federal government, and that any trend to delegate that function, either directly or indirectly, is basically unsound.

Preventive Medical Programs

Pilot experience with Company Medical Programs has run the gamut from nearly ideal relationships to one specific instance in which a medical program was admittedly conceived and implemented for the express purpose of eliminating ALPA pilots. It is, therefore, difficult to make any broad generalizations which can fairly be applied to all cases. However, we can list briefly some of the things we believe an ideal preventive medicine program should be as well as those we believe it should not be.

It should be:

- A department whose primary purpose is to promote health and detect evidence of deviation from optimal health that might result in a failure to meet CAB standards, which makes this information known to the individual, and which suggests remedial action.
- A department in which the medical director is on a level with top management.
- A department which commands the complete confidence of the pilot. (Understandably, this is no easy task.)

It should not be:

- One which extends the scope of its operation to include the application and interpretation of the Civil Aeronautics Board or their own additional standards.
- One which denies the individual pilot group the right to participate, or not participate, as they desire.

Briefly, its purpose should be to prolong the pilot's flying career.

Why The Company Department?

Granted these factors, along with appropriate contractual protective provisions, there were at least four reasons, in the Committee's opinion, that a first-class company medical department is the best source of a good preventitive medicine program for pilots.

First, it is a logical fringe benefit, and in a profession where good physical condition is a basic requirement, it is appropriate that the expense involved should be borne by the industry which requires the high standards.

Next, and very closely related to the first reason, is simply that it may prolong the pilot's earning career at no expense to himself and with a resultant enhancement of his career earning potential.

Thirdly, a company medical program, almost by definition, implies regular, periodic examinations on an organized basis. They are therefore less subject to neglect which would not be in the best interest of the pilot.

Finally, from management's viewpoint, the expense involved is money very well spent, for it maximizes the utilization it can get from a productive unit in which it has a very large investment and which is indispensable in the operation of the air line.

Some Committee Findings

In its report, the Physical Standards Committee additionally pointed out:

"Company physicals are more thorough than any other type of examination that a pilot takes. Electro-cardiograms, X-rays, and blood tests are given; more intimate case histories are made; and they are interpreted by doctors who are not only aero-medical specialists but also specialists on commercial aviation's medical problems. Through these examinations, an aeromedical specialist can usually detect those early stages of physical deterioration which might lead to eventual disqualification and can assist in retarding or correcting this potential disability. Not only can the pilot's professional life be lengthened, but also his total life expectancy can be increased. This can be illustrated by many cases, such as that of the young pilot whose examination revealed the early stages of lung cancer. He was operated on in a matter of days, and is now back flying the line with a normal life expectancy."

It was also pointed out by the Committee:

"We should like to make it perfectly clear that while we endorse the company medical department whose purpose is to keep the pilot flying, we believe that the decision of submitting to these examinations should be left to the discretion of the pilots of each individual air line. This item should be evaluated by the pilots concerned, modified to fit other parts of their contract and negotiated in accordance with their evaluation of its importance. However, it should be remembered that pilots are being critically evaluated and can be disqualified, according to standards created by a process in which they are unable to participate. Any procedure permitting this is basically unsound."

Coordinating Medical Information

Another action of the Fourteenth Convention, allied with a sound medical program, was the creation of a department, sub-department, or other designated unit within the Home Office to correlate and coordinate all information concerning the health of air line pilots that is available through the normal operation of the Association. This division of the Home Office would also serve as:

- A liaison between the Association and medical centers or medical specialists, whose services may be needed;
- A source of information for the Association on all matters pertaining to the health of pilots;
- A center to keep track of existing and potential problems in ALPA's insurance programs;
- An investigative body to pinpoint problem areas in actions or established standards of the International Civil Aviation Organization, Civil Aeronautics Administration, Civil Aeronautics Board, or any regulatory or industry body;
- A research center to: (1) furnish needed information to the Association's Legal Department in its work of representing pilots having licensing problems for physical reasons, (2) to work with negotiating committees on any contractual matters involving the health of the pilot or other Association representation problems; (3) to assemble facts on weaknesses or desired changes in the engineering, design, or structure of aircraft that affect the pilots' health, comfort, and efficiency; (4) to collect detailed data on the reasons pilots stop flying after the age of 45, in order to develop a rational retirement age concept based upon experience.

Human Engineering Research

The Fourteenth Convention also paved the way for research in Human Engineering and related factors, a field which will become increasingly important as aircraft performance increases and technology advances. Convention action in this respect included:

- Authorization for research in those areas deemed appropriate by the President and/or the Executive Committee in an endeavor to solve problems relating to pilot efficiency, safety, health, and productive longevity utilizing technically qualified members of the Air Line Pilots Association whenever possible.
- The seeking of outside sponsorship of worthwhile projects when research costs appear beyond the means of the Association or when otherwise deemed advisable.

In its studies the Physical Standards Committee concluded that there are

many extremely important and unanswered questions in the field of Human Engineering at this time. For example: Will noise levels on the order of those existing in the cockpit of some present aircraft increase the incidence of premature deafness in pilots? How much do such things as noise, inadequate ventilation, uncomfortable seats, present scheduling practices, and present on-duty limitations add to pilot fatigue? Is excessive vibration a factor which is causing breakdowns among helicopter pilots? Do frequent short-term interruptions in the pilot's physiological day-night cycle create fatigue or any other type of health problems? This is by no means an exclusive list, nor have the items been given any order of priority; however, they will serve to illustrate some of the types of problems which the Committee believed could be solved with sufficient interest and research. Two questions are really involved here. One of them is "How can the critical problem areas be discovered?"; and the other is, "Who is going to do the necessary research which will lead to their solution?"

Obviously there is no pat answer, but it is logical that research, some of it long term, by interested air line pilots who are qualified in their specialty, can make a substantial contribution, particularly when a well-coordinated effort is made to utilize existing knowledge and, where necessary, outside research agencies. The military services have been, and are, doing considerable research into many areas of aviation, and they have made tremendous contributions to both their own and to the civil branch of aviation medicine. However, we also believe that there are additional civil aviation problems which are logically outside of the military province. These must be solved, preferably on a cooperative basis by the air line pilots, the industry, or a civil agency. It may well be that the most important pilot contribution will be to simply point out the problem in a manner which is scientifically acceptable. Certainly no group is closer to the actual environment.

Jet Health Problems

In still another allied area; based on studies conducted by the Turbo-Prop and Jet Study Committee, the Convention assigned the Physical Standards Committee the task of monitoring and maintaining a continuous watch on developments and research in the field of jet health aspects so that the Association may remain abreast of the current status of problems. Possible problems include several associated with high level of cabin pressurization including the rapid decompression hazard, cosmic ray exposure, microwave radiation exposure, lack of sufficient humidification, visual glare effect on eyesight, cumulative fatigue, cockpit noise level, etc.

In its report on the health aspects of jets, the Turbo-Prop and Jet Study Committee noted: "The physical demands for jet and turbo-prop operation do not appear to be in excess of the high standards of physical competency demanded of present day air line pilots." However, their studies also indicated:

- Certain effects of anticipated fatigue due to existing complexities of navigation, communication, and airways traffic control are expected to accompany the greatly increased operating speeds of this equipment.
- The importance of the effect on health in the operation of turbo-prop and jet aircraft in scheduled air transportation would seem to lie in the direction of exerting the maximum effort to assure that the airplane is tailored to the air line pilots, and not hoping for a "new breed" of pilot to accommodate these advancing designs of transport aircraft.
- Continuous operation of jet and turbo-prop equipment may have a long range debilitating effect on the health of the flight crews.

Pilot Aging And Retirement

Other actions taken by the Convention in the field of health and physical standards concerned pilot aging and retirement. Briefly, these set a guide for the Association to use in continuing to enhance retirement programs for air line pilots.

Five Basic Assumptions

In setting this policy, five basic and fundamental assumptions were involved:

- A professional air line pilot career should produce enough income to provide the pilot and his family with a standard of living over his entire lifetime, which is commensurate with his station, his profession, and his responsibilities. It should not be necessary for him to be forced to find other means of income providing that he has successfully completed a normal career as an air line pilot. (A reasonable and flexible pension program is one of the best solutions to this problem.)
- It is desirable, from the point of view of the pilot, the industry, and the community, to keep the pilot flying as long as he can do so efficiently and safely.
- If a pilot wishes to stop flying, he should be able to gracefully retire prior to normal retirement age, because of the demands which are made upon him, and the inherent nature of his profession. However, there should also be a positive financial incentive for him to keep flying until his normal retirement age.
- If a significant number of pilots fail to meet required physical standards before a normal and realistic retirement age is reached, or are unable to maintain competency until they reach a normal and realistic retirement age, then financial provision must be made by the industry, for obviously a sacrifice is being asked of this profession, either by the physical standards established, or by the competency which is required. (On at least one air line we have made progress in this direction by providing that in the event of compulsory early retirement for physical reasons, the normal actuarial reduction for early retirement from the fixed income portion of the pension fund is cut approximately in half at company expense.)
- If the physiological and psychological requirements of his profession are such that early retirement from flying is indicated, the pilot should be made aware of this as soon as possible, and the development of means and methods of making it possible for him

ALPA's Physical Standards Committee.

to remain a respected and productive member of society, in a manner satisfactory to him as an individual, should be given a high priority by everyone in the industry.

Additional Findings, Statistics

Some of the facts revealed in the studies of the Physical Standards Committee on this subject may prove interesting.

There has been speculation about how long a pilot should fly almost since the beginning of aviation, and today it is a matter of concern to pilots and their families, to air line management, and, of course, to the traveling public.

Historically, flying has been considered a young man's game. There haven't been any old pilots because aviation itself was an infant. However, with the increasing growth and maturity of our industry, we are reaching the point where the question of the aging pilot is more than a simple academic matter. It is of potential concern to every air line pilot.

To date the group which has been most actively studying the aging pilot question is the Aero-Medical Association. Pilot aging is, of course, a natural field for their study. Their activities were intensified in 1952 when General Armstrong, then President of the Aero-Medical Association, and Dr. William Stovall, President-elect and Medical Director of the Civil Aeronautics Administration, requested the Doolittle Airport Commission to include the "civil aviation medical problem" in their inquiry.

The Doolittle Airport Commission was appointed by President Truman to investigate the very broad aspects of airport and air line safety, primarily as a result of the tragic series of airplane crashes which occurred in the vicinity of Newark and Elizabeth, New Jersey. As a result of its studies, the Doolittle Airport Commission recommended that the Aero-Medical Association conduct a serious long-range inquiry into the problem of pilot aging. This recommendation was incorporated as part of President Truman's National Air Policy, and the Secretary of Commerce was directed to collaborate with the Aero-Medical Association, the Civil Aviation Medical Association, and the Flight Safety Foundation, in the study of this and certain allied problems. Today, neither that committee, nor any other committee of which we have any knowlege, has discovered a valid pilot aging problem which applies to commercial air line pilots.

There does seem to be some general opinion that pilots should stop flying around the age of 60. Apparently, age 60 chosen only because it was felt that pilots should stop flying at a somewhat earlier age than people normally retire. Sixty-five was the normal retirement age, in many industries and 60 was picked simply because it was something less. Certainly no validated criteria have been developed for determining a pilot retirement age of 60, nor is there today medical evidence that 60 is too old. However, we are day by day accumulating an ever-increasing amount of practical evidence suggesting that continuing in service as a pilot to at least 60 years of age is entirely reasonable. This evidence is being built up by the competent and successful active air line pilots who are flying in their early and late 50's; by those who have already retired at 60; and by the number of pilots over 60 years of age now actively flying for air lines.

One of the prime factors making this problem so elusive is the comparative youth of our industry. The available statistics are nearly worthless for two reasons: (1) The industry has not been in existence long enough to develop a significant number of pilots who could be classified as aging in any popular sense of the word, and (2) In those cases where pilots stop flying before reaching retirement age, we have no adequate record of the reasons which prompted them to discontinue their flying careers.

The Association, however, is rapidly accumulating valid statistical data regarding pilots, the length of their careers, their reasons for terminating their flying careers prior to retirement, and the nature and extent of their physical problems. ALPA's insurance programs, including Mutual Aid and Loss of License, are a basic source of information. There is nothing comparable to them anywhere.

It is apparent from some of the figures we do have that ample statistical data regarding reasonable retirement ages for pilots will be available in the relatively near future. For example, while the average age of all ALPA members is approximately 37, we have almost 3,000 pilots who are 40 years of age or older, and more than 1,200 of them are 45 or older. We have 230 pilots who are between 50 and 54 years of age; 101 who are age 55 or older; and 21 who have passed their sixtieth birth date and are active air line pilots. Looking at these figures from a slightly different viewpoint, we find we have nearly 8,000 present members of ALPA who have a life expectancy of over 60 years, and over 7,000 whose life expectancy, according to the conservative 1937 Standard Mortality Table, is something over 65.

Conclusions

The actions taken by the Fourteenth Convention will not, of course, solve all pilot medical problems for all time. Many of them will take some time to accomplish. However they are a sound initial step in a broad area of essential pilot interest. Through increased emphasis on the maintenance of high initial standards, maintenance of pilot health through preventive medicine, and protection from possible health hazards resulting from the practice of his profession, they should make a substantial contribution towards ALPA's long-range goal of maximizing the career potential of the air line pilot.

'Operation Compassion'

The transatlantic airlines' "Operation Compassion" has lifted more than 137 tons of emergency relief supplies for Hungary from North America to Europe without charge during the last 60 days, the International Air Transport Association (IATA) reports.

The 274,980 pounds of cargo lifted so far in the operation has comprised layettes and baby foods, winter clothing, vitamins, plasma, antibiotics and other medical supplies, including portable X-ray apparatus.

Shipments have been consigned by the Red Cross, the American Friends Society and other recognized relief agencies. They have been picked up at New York, Montreal, Chicago, San Francisco, Los Angeles and Vancouver; and flown directly to Vienna or transferred to intra-European services at other gateway airports.

Most of these cargoes are being flown over the North Atlantic route from the East Coast, but many are also moving from the U. S. West Coast via the Polar route. Aircraft being delivered from California factories are also being used in the operation.

Many shipments have been expedited to meet emergency needs: passengers on one aircraft voted unanimously to accept a delay in departure to assure that vital medical supplies could be picked up for overnight transport to Hungarian refugee camps.

Fifth Annual Air Safety Forum

Most Critical Current Problems From An Operational Standpoint Will Provide Theme Of Yearly Safety Symposium Scheduled For March 5, 6 and 7, In Chicago

The Fifth ALPA Air Safety Forum will be held March 5-7, at the Shoreland Hotel, Chicago. This annual event, sponsored by the Air Line Pilots Association, has now become well-established in the U. S. air transport industry.

The first Air Safety Forum was established by the 12th Convention and held in 1953.

Its aims are to promote a free exchange of opinion between those most concerned with air safety. This is accomplished by bringing together pilot safety representatives from every air line within ALPA, with outstanding technical personnel from industry and government, in discussions stressing the "operational viewpoint."

Forums' Philosophy

The guiding philosophy behind the Forums: As professional men, the air line pilots' air safety concern goes beyond the actual physical aspects of job performance and must include active participation and responsibility in aviation planning, research and development—all of which are related to the final discharge of their responsibility which can be delegated to no one else —that provide the operational tools with which they must work with the highest degree of safety.

ALPA's Aims

Specific aims in ALPA's sponsorship of the Safety Forums are:

- To insure adequate study of Association air safety subjects for policy-making purposes.
- To provide opportunity for analysis of the work done by special pilot committees.
- To enable Association representatives to exchange viewpoints with top industry and government experts.
- To promote ALPA organizational safety efficiency.

1957 Agenda

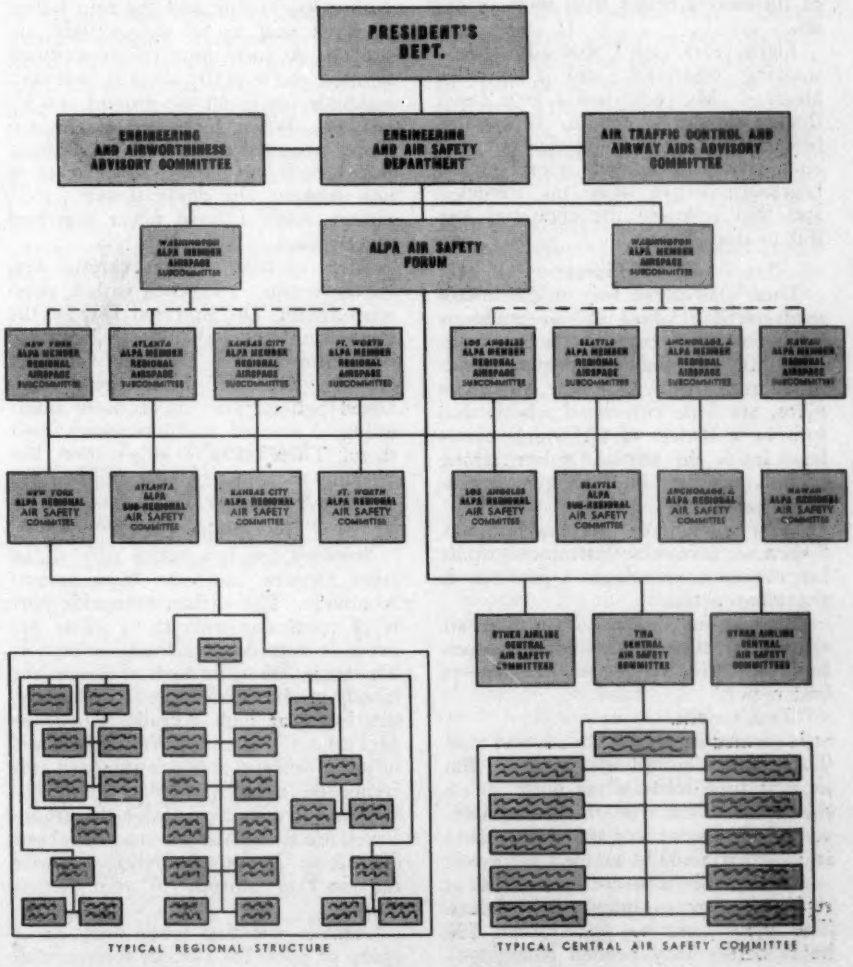
The 1957 Forum will concentrate on the most critical current problems from an operational safety standpoint, most of them closely related with the technological transition and transformation taking place in air transport. The tentative advance agenda anticipates panels covering such subjects as Air Traffic Control Developments, Turbine Transport Airplane Development, Pilot Training Requirements for Present and Future Aircraft, and Airplane Ditching Experience.

In addition, speakers, representing various phases of the industry will address the Forum, to give as complete a picture as possible of the problems facing the aviation industry in present-day and future operations.

Further details of this year's program will be announced in the March issue of THE AIR LINE PILOT.

ALPA's Air Safety Forums are officially incorporated in ALPA's Air Safety structure *(see below)*.

ALPA AIR SAFETY ORGANIZATION CHART


PRESIDENT'S DEPT.
ENGINEERING AND AIRWORTHINESS ADVISORY COMMITTEE
ENGINEERING AND AIR SAFETY DEPARTMENT
AIR TRAFFIC CONTROL AND AIRWAY AIDS ADVISORY COMMITTEE
ALPA AIR SAFETY FORUM

TYPICAL REGIONAL STRUCTURE

TYPICAL CENTRAL AIR SAFETY COMMITTEE

Why An Air Line Pilot Quit Smoking

He Found The Most Striking Reasons Right In His Own Backyard — Flying

By Capt. Robert N. Buck, TWA

(Reprinted from July, 1956, READER'S DIGEST*)*

Flying for a living is tough on you physically. In my job of flying to Europe and the Near East I can miss four nights' sleep in one week, go through seven hours of time change, eat dinner at breakfast time, lunch at 5 a.m. and generally give my system a rough time. Yet I have to take three physical examinations a year, and if I fail one of them—except for minor or correctable reasons—my career as an air line pilot is finished. This dark cloud always floats somewhere in a pilot's sky; it's his biggest insecurity. So pilots are health-conscious, take care of themselves better than most people do.

Eight years ago I was addicted to smoking cigarettes, and I brooded about it. My pulse was a little faster than it should have been. It was fine before that first morning cigarette, but once that was lighted—zoom! Later heartburn would singe my insides—and that followed the cigarettes too. But to stop . . . ah.

Tar In Gyros

Then one day I was in the instrument-overhaul shop of our company talking to the foreman. We were discussing gyros, used in important blind-flying instruments. One type, air-driven gyros, are little cup-edged wheels that spin in a stream of air which comes from inside the airplane cabin; strong suction brings it into the gyro instrument case.

"You know," the foreman told me, "when we take these instruments apart for overhaul, our biggest problem is the tobacco tars."

"You mean," I asked, "the cabin air that got in these gyros had that much tar from smoking by the passengers and crew?"

"That's right."

It seemed incredible, but it was true. Today filters curtail the problem. But at that time tobacco tar built up on the delicate parts of the instruments to such an extent that there were cases in which it actually stopped the gyros!

All airplane parts are overhauled or replaced after so many flight hours. The gyros used to work about 500 hours before they needed changing—the *major* consideration in their service life being tobacco-tar accumulation! Now planes are coming off production lines, with electrically driven gyros, some in hermetically sealed cases which keep out air—and tobacco tar.

I began to wonder: If that air in the cabin polluted the insides of the instruments, how about *my* insides? It helped to convince me that I ought to quit smoking.

How To Quit

Stopping wasn't fun. I suffered all the torments, particularly in moments of tension. One day I was coming in with a low ceiling and the rain falling hard; it was, as we say, a tight approach. At such times you concentrate fiercely, you're really all in it, and then suddenly you're on the ground and it's finished. When I got out of the airplane I wanted a cigarette, no fooling. But I held out. Now, after years of not smoking, the desire is over—well, almost over. I have never regretted my decision.

After quitting I kept careful tabs on the results. I checked with a physician friend, Dr. Emerson Day of the Cornell Medical College. Yes, my heart slowed to a pleasant walk, my flaming stomach disappeared, food tasted better. The effects were interesting; I wanted to know more about them. There's lots of information, but I found the most striking things right in my own back yard—the flying world.

Two Major Effects

Smoking has two major effects, one from nicotine and one from carbon monoxide. The carbon monoxide part is of particular interest to pilots because it cuts down altitude tolerance. The toxic effect, through action in the blood, produces an oxygen deficiency, like being at high altitude. Dr. Ross McFarland, author of *Human Factors in Air Transportation*—a standard reference on aviation medical matters—says that if you are a pack-a-day smoker you are living at an altitude of about 8000 feet! If you are flying, you *add* the smoking altitude to your actual altitude.

German scientists made tests on a group of pilots for altitude tolerance to determine how much altitude they could take on days they smoked heavily and days they didn't smoke at all. The result: a 4000- to 5000-foot difference in favor of *not* smoking.

Visual Limitations

Research has indicated too that smoking hurts your "dark adaptability"—your ability to see in the dark, and to change from light to dark. This is important to pilots. We wish we could look out into the night and see like a cat. Motorists driving a car at night should remember this effect of cigarettes.

Nicotine apparently raises the body's oxygen requirement 10 to 15 per cent. That affects both night vision and the depth perception that enables a pilot to judge his height above the ground and bring the plane to a smooth landing.

In a test of 900 airmen—450 non-smokers and 450 smokers—the influence of smoking on heart action was clearly indicated. The smokers averaged a higher resting pulse rate than non-smokers; their pulse rate increased more and their blood pressure went higher with moderate exercise. Their recovery to normal after exercise was slower.

Affects Fatigue

Tests have also been made with flight crews to check fatigue. Crews have been observed on long flights when they smoked one to two packs a day; then, on return flights with similar hours, when they did not smoke. The result: the crews felt much less tired when not smoking. This is something I especially noticed after I quit smoking. Long night flights used to really knock me out, exhaust me. Now I'm just normally tired.

Recently I made a flight from New York to Paris to Cairo with an entire non-smoking crew. We all remarked about how fresh the cockpit air was, how our eyes didn't burn in the late tired hours. We began to list the crew members we know who have stopped smoking. The number surprised us; flight crews are getting the word.

So airplanes and smoking aren't on friendly terms. The U. S. Navy told its fliers recently in the *Naval Aviation Safety Review:* "The pilot who wants to fly at optimum efficiency and safety will try to reduce his smoking, especially before flights and most especially before night flights."

The people of the air have found that smoking is bad for them. And, of course, if smoking does things to fliers that lower efficiency and impair health, it does the same things to you.

State Of The Association

Part 2

(EDITOR'S NOTE: *This is the second installment of the* STATE OF THE ASSOCIATION REPORT *submitted by President Sayen at the Fourteenth Convention, highlights of which are being reprinted due to many requests for publication of this information. This installment covers the Employment Agreement, Legal and Conciliation, and Engineering and Air Safety Departments. The figures employed are as of Oct. 1, 1956, when the report was written.*)

Employment Agreements

The effectiveness of the collective bargaining activities of the Association may be measured by the extent to which the following objectives are met:

- The maintenance of pilot standards of compensation, rules, and working conditions relative to the general economy and other professions.
- The promotion of pilot standards in keeping with changes in the industry and the adjustment of agreements accordingly.
- Accurate and expeditious interpretation of agreements when questions and disputes arise and compliance with the terms and provisions of negotiated agreements.
- The maintenance of harmonious labor relations between pilots and air line companies consistent with mutual respect.

Agreements Signed

As of October 1, 1956, all air lines in the Association were covered by currently amended collective bargaining agreements with the exception of Pacific-Northern and Pan American World Airways. As of the date of the last Convention, there were approximately eleven air lines operating under noncurrent working agreements. Pacific-Northern has applied for mediation and Pan American which opened August 1, 1956 is in mediation. We find, therefore, that the Association is current, for all practical purposes, on all of its agreements. There are a number of pension agreements for which the definitive agreements covering all phases of the pension program must still be completed.

The following is a categorized list of Agreements concluded between November 1, 1954 and October 1, 1956:

Category	Number
Pension Plans	19
First Agreements	7
First System Board of Adjustment Agreements	7
Amendments to Agreements	82
Amendments to System Board Agreements	7
Interchange Letters of Agreements	15
Miscellaneous Understandings and Agreements	73
Arbitration Awards	4
Total	214

The foregoing may be compared with the collective bargaining activity of the Association in past years from the following table:

Up to 6th Convention	11-29-40	16
6th to 7th Convention	12- 1-42	31
7th to 8th Convention	12- 4-44	38
8th to 9th Convention	2-18-47	51
9th to 10th Convention	11- 9-48	57
10th to 11th Convention	10- 1-50	75
11th to 12th Convention	10-20-52	130
12th to 13th Convention	11- 9-54	148
13th to 14th Convention	11- 5-56	214
Total		760

It is apparent from the foregoing that the collective bargaining activities of the Association have been greatly accelerated in recent years. During the past two years, agreements with air carriers have been concluded at the rate of approximately two every five days. It is believed imperative that this rate of collective bargaining continue and that the Association be kept entirely current in this field. Time and ground lost in collective bargaining is difficult to regain. To maintain such a pace, however, requires the expansion of the facilities of the Association and indicates the reason why this Department of the Association has been expanded more than 100 percent in recent years and expansion is still continuing.

Financial Gains

Wages: While the pilots on most of the major air lines and many of the smaller carriers decided to concentrate their negotiations in the pension field during the last two years, gains have nevertheless been made in rates of compensation. At the conclusion of each calendar year, the Association makes a complete statistical study of the actual income received by all members during the calendar year. Such studies were inaugurated in 1952 and enable the Association to prepare a detailed comparative analysis of the progress being made in this field by the Association. The latest study is for the calendar year 1955. Between the calendar years 1953 and 1955, average pilot income for all members of the Association increased in excess of $1,000 per year. This is a net increase in pilot payrolls of approximately $11,456,000

The ALP

Camera

DC-8 Simulator

Artist's sketch of the simulator for the DC-8 jet which is being built by Link for the Douglas Aircraft Co., UAL, SAS, and KLM. Simulated weather radar, cockpit motion and a visual system for landings and take-offs are available as optional features of the simulator, which will be completed before the first DC-8 is delivered.

On The Cove

Two more British-made aircraft have recently invaded the U. S. airline market. They are the Comet, made by deHavilland, and the Bristol Britannia.

Capital Airlines, which in 1955 introduced the Vickers Viscount into domestic line service, has ordered 14 Comet turbojets, of which the first four will be of the Comet IV series and the rest the Comet IV A. The IV A will be specially designed for short and medium-ra Both typ will feat Avon po plants. calls for the 1958.

North Airlines five Brit ia turbop series, wi an optio tional tu They wil on the ro Florida r rier late fall. Po transport signed to of 400 m , will be teus.

ILO Conferenc

On left: Pres. Sayen confers with . A. New Chief, Flight Branch, ICAO, an Capt. Ja Schenkman, International Civil viation O sultant to ILO, during Internati l Labor ganization's Bipartite Civil Aviati Confere at Geneva. ALPA President repre nted all U aviation-employed labor. Below LO Con ence in session.

ALPA

nera

Cove

short and medium-range operations. Both types will feature Rolls-Royce Avon power plants. Initial delivery calls for late 1958.

Northeast Airlines has purchased five Britannia turboprops of the 305 series, with an option for an additional two. They will be introduced on the new Florida route of the carrier late this fall. Powerplant of the transport, designed to cruise at excess of 400 mph, will be the Bristol Proteus.

nferenc

nfers with A. A. Newton, CAO, and Capt. Jacob nal Civil Aviation Con- International Labor Or- Civil Aviation Conference dent represented all U. S. or. Below ILO Confer-

Executive Committee Meeting

The first meeting of the new year held January 9, 10 and 11 was attended by (l. to r.): Reg. IV V. P. N. G. Carper, Jr., Reg. V V. P. W. H. Drummond, Sec. R. L. Tuxbury, First V. P. G. M. LeRoux, Treas. D. J. Smith, Reg. III V. P. C. E. Luther, Reg. I V. P. C. C. Spencer, Jr., Reg. II V. P. R. J. Rohan, and Pres. Sayen (sitting).

Millionth Letter

January 2, 1957 marked another mile stone in Home Office's Mail Room, when 1,000,000th piece of mail, in one year, was sent out. Shown as he processed one millionth letter is A. W. Johnson, Mail Supervisor; Council Coordinator G. R. Johns looks on.

ALPA's Negotiators photographed during last year's Negotiators Conference and Department Secretaries.

per year. These figures do not reflect the results of negotiations on wages which were completed in the latter part of 1955 and 1956.

Pensions: Since November 1, 1954, when the Board of Directors first authorized the negotiation of retirement programs for pilots, such programs have been concluded with the following 19 air lines comprising 76.1 percent of ALPA's membership: American, Capital, Continental, Delta, Northeast, Northwest, Pan American, Trans World, United, Western, Hawaiian, Bonanza, Lake Central, North Central, Ozark, Piedmont, Southern, Southwest, and West Coast.

The value of the Company contributions to the members of the Association in such pension programs is estimated at approximately 13 percent of pilot payroll per year or a total return in excess of $15 million per year. It is anticipated that from the precedents established to date, it will be possible for the Association to conclude retirement programs for the remaining 23.9 percent of the pilots not now covered by such programs in the near future.

In addition to the foregoing, past service credits have been negotiated with a number of carriers. The value of such past service credits for individual pilots varies based on their length of service and salary, but in some cases it has been more than $20,000 for an individual pilot. In some instances, minimum pensions have been provided for the older pilots who would not have an opportunity to accumulate sufficient funds to provide such minimum pensions within their remaining working life.

The retirement programs negotiated follow the principles established by the 13th Convention. The programs are integrated with the other insurance programs of the Association and a large number of options are available to the individual pilot in order that he may integrate the retirement program with his overall estate planning in the most efficient way to accomodate his personal problems.

All of the programs have been concluded independent of any Social Security payments which the pilot may receive.

The average program provides a pension at age 60 for a pilot with 30 years of service who averages $12,000 per year which can reasonably be estimated at $10,000 per year for the rest of his life.

Fringe Benefits: The items above do not include the advances and improvements which have been negotiated in various fringe benefits during the past two years, such as, vacation, meal allowances, deadhead pay, holding time pay, training pay, sick leave pay, travel pay, common base pay, on duty time pay, and so forth. These amounts, of course, vary widely and are difficult of accurate computation. They are, however, valuable. For example: Assuming a total of 10,000 pilots, if the amount of vacation was increased by one day, it would equal a dollar increase of approximately $350,000 per year. On the same basis, meal allowances were increased in excess of $500,000 per year, and the provision for payment of deadhead pay at half rate would amount to $1,485,312 per year if each pilot were to average but two hour's deadhead time per month.

Comparisons

The gains secured by individual pilots vary widely with their seniority, type of equipment flown, status (captain or copilot), utilization on the air line, amount of night flying, and so forth. Some miscellaneous figures, however, may be of interest:

- The average income for first pilots in 1946 was approximately $8,287.00 per year.* There was no minimum guarantee, no full paid sick leave, no training pay, vacations were taken at reduced pay, no deadhead pay, and no schedule or actual. On promotion to first pilot, the pilot ordinarily reverted to first year captain pay.
- The average copilot pay in 1946 was approximately $3,480.00 per year.*
- There was no reserve pilot guarantee, so average domestic pilot pay may be estimated at $5,883 per year in 1946.*
- The the approach of 1952, the average salary for all pilots was approximately $9,743.00.
- For the calendar year 1955, the average salary for all pilot members of the Association was $12,300.00 per year. First Pilots averaged $15,361.00, Reserve Pilots $11,401.00, and Copilots $9,020.00.
- In 1955, all pilots of the big four domestic air lines (American, Eastern, United, and TWA) averaged $12,868.00. First Pilots averaged $16,225.00, Reserve Pilots $12,936.00, and First Officers $9,118.00.
- On the wholly international carriers in 1955 (Pan American, Panagra) all pilots averaged $13,312.00, First Pilots $17,394.00, and Copilots $10,466.00 (includes 2nd officers and navigators).
- On regional service carriers in 1955 all pilots averaged $9,499.00. First Pilots $11,428.00, Reserve Pilots

**Civil Aeronautics Board, Annual Airline Statistics.*

$9,388.00, and Copilots $6,471.00

● The foregoing figures do not reflect retirement income. Neither do they reflect the results of negotiations concluded in the latter part of 1955 and thus far in 1956.

● During the calendar year 1955, 306 first pilots earned in excess of $20,000 per year, exclusive of pensions. 281 copilots earned in excess of $12,000 per year. This compares to 46 first pilots who earned in excess of $20,000 in 1954 and 38 copilots who earned in excess of $12,000 per year in that year.

● More collective bargaining has been done for pilots in the past five years than in the previous 20 years of the Association's existence. The result has been that the income of pilots has been increased more in the past five years than was accomplished in the entire previous 20 years.

All of the foregoing does not mean that we should be in any way complacent in our collective bargaining. The Association must continue to be constantly aggressive in all fields of collective bargaining if the position of the pilot relative to other groups, our economy, and constantly changing factors in our economic life is to be maintained and enhanced.

Gains In "Rules And Working Conditions"

Since our last Convention, the Association has obtained or improved the following favorable rules and working conditions for pilots:

● Schedule or Actual—The schedule or actual concept has been incorporated in practically all agreements.

● Increment Pay—The increment pay concept for copilots has been incorporated in all but four agreements.

● Minimum Monthly Guarantee—Minimum monthly guarantees have been incorporated in all agreements.

● Vacations—Fully paid vacations have been incorporated in practically all agreements.

● Training Pay—Training pay has been incorporated in twenty-three agreements. A recent agreement with United Air Lines covers working conditions and compensation for flight simulator training.

● Sick Leave Pay—Sick leave has been extended in some contracts and full pay for sick leave written into many agreements.

● Retroactivity—Strong precedents have been established for full retroactivity.

● Flight Time Limitations—Flight time limitations and rest periods set forth in the Civil Air Regulations as of June 1, 1954 have been incorporated into twenty-four agreements. This has been made possible by the 8-hour dispute processed in 1954.

● On-Duty Relationship to Flight Time and Flight Pay Credit—Seven agreements now tie in a definite relationship between on-duty time and flight pay and flight time credit for pilots.

● Minimum Period of Work—Provides a minimum compensation for the pilot who flies or reports to fly less than a fixed period of time—usually one hour. This has been incorporated in thirty-one agreements.

● Layover and Standby—Layover and standby compensation have been incorporated into several agreements.

● Improved Bidding Sections—Bidding provisions for all pilots are provided in practically all agreements. Until 1952 bidding was largely restricted to first pilots and copilots were assigned to bases and equipment as management desired. Multiple types of equipment and multiple bases have also necessitated more complex assignment rules.

● Common Base Pay—Common base pay provides for accumulation of longevity credit for base pay from date of employment regardless of status. A copilot promoted to first pilot maintains his longevity for base pay. Thirty agreements now have common base pay and, in others, the differential has been narrowed.

● Arbitration in System Boards—Arbitration of deadlocked grievances in the System Board is now provided in thirty-two contracts.

● Scheduling Committees — The right of pilot participation in scheduling has been incorporated in a number of agreements. Efforts are being made to expand the schedule committee principle.

Regional Service Line Agreements

The pilots of regional service lines have historically received less compensation for flying identical aircraft flown by trunk carrier pilots. The Association has vigorously opposed this concept and has made great strides in emancipating regional service pilots from this practice. Recently negotiated agreements with regional service lines have gone far to narrow this compensation gap.

In the meantime, contracts covering pilots of regional service lines have been improved in other respects until they equal and, in some cases, have improved on trunk line agreements. During 1954-55, the first pension agreements have been negotiated with Regional Service Carriers. In every case, such agreements have included past service credit at current rates of compensation for all years of past service.

Policy

In matters of policy, the department has:

▶ Expedited the processing of cases under the procedures of the Railway Labor Act, yet in complete compliance with the Act's requirements.

▶ Insisted upon the interpretation of contracts by negotiator or negotiating committee that was present when the contract was written.

▶ Frequently amended contracts to meet problems as they arise.

▶ Incorporated positive rule making with fewer "don'ts" in contracts and more penalty clauses.

▶ Processed pension plans or improved pilot pension plans and has negotiated a separate plan adopted to the needs of air line pilots.

Interchange Agreements

Since the last Convention, fifteen interchange agreements have been negotiated or renegotiated. These agreements reaffirm the ALPA policy that the pilots of one air line may not fly over the routes of the pilots of another air line unless and until there is an agreement between the pilots and their respective air lines.

Where such flying may occur by reason of weather at the interchange point, etc., compensation and flight credit is provided for the pilot who may be overflown. Other miscellaneous provisions are included to govern the operations of interchanges and are an example of positive rule making.

Problems

▶ The insistence of the pilots on some lines on negotiating committees which are too large for efficient operations and administration.

▶ A complete turnover in pilot members of negotiating committees each year. At least two members of a committee should be retained for continuity. Master Executive Councils have adopted this practice.

▶ The continued political and economic attitude which has resulted in strong resistance by carriers to pilot requests and proposals. During the past two years it has been necessary to process thirteen strike votes to keep the Association's programs current.

▶ The administrative difficulty encountered in the administration of collective bargaining agreements with forty-seven air lines. The Association in the last 96 weeks has negotiated and executed 214 separate documents. This is an average of two documents each five days.

▶ The constant turnover of pilot

personnel in representing capacities which makes it difficult to maintain consistent programs over a period of years.

Staff

Since the last Convention, the staff of the department has been increased 100% and expansion still continues. The present negotiating staff members are: J. C. Christie, Department Head; F. J. Albright, Lucien Koch, R. L. Harkenrider, John Meiser, John Ulm, William MacWilliams, Paul Dwyer, Karl J. Ulrich (Miami Office), Howard M. Jones (Los Angeles Office). Secretarial: Dorothy Roecker and Joanne Burge.

In addition to the foregoing, four other staff members are trained negotiators who may be utilized as necessary to help keep the work requirements current. This makes a total of fourteen people available for such problems as compared to four in 1951.

Legal And Conciliation

The functions of the Legal and Conciliation Department of the Association may be generally catalogued as follows:

- To provide legal counselling to the Association's officers and personnel, departments, pilot committees.
- Representing the Association in legal action brought by it or against it in the jurisdiction where the general offices of the Association are located —Chicago, Illinois.
- Providing legal counselling and assistance to individual pilot members in grievances, particularly before the System Boards of Adjustment, and in instances where the pilot is charged with violation of the civil air regulations.
- Representing the Association in association with local attorneys in jurisdiction other than Illinois where legal actions are brought by or against the Association in these jurisdictions; monitoring the litigation and advising with the local counsel in all aspects of the suit.

Grievances

The Legal Department of the Association is often called upon to aid in resolving problems, possible grievances and other difficulties. In each such instance an "incident file" is opened in the department and correspondence upon the problem is continued until the incident is disposed or grows into a grievance.

When an incident becomes a grievance, the Legal Department, if requested:

- Advises with the grieving pilot upon the merits of his grievance, prepares the formal grievance and sometimes files it for him.
- Opens a grievance file in the Department, keeps track of the grievance as it finds its way through the grievance machinery of the Pilots' Employment Agreement, and reminds the grieving pilot of the necessity of meeting the procedural deadline dates.
- Prepares and files the Letter of Submission to the System Board in all grievances which reach the System Board level.
- Arranges semi-annual and special meetings of the System Boards, attends and represents the grieving pilot in the preparation and presentation of his grievance case to the Board.
- If grievances are deadlocked by the Board, arranges the appointment of the Neutral, the future meeting of the Board with the Neutral in attendance, and represents the grieving pilot in the further presentation of his case to the Board as thus composed.

CAA Violation Cases

In seeking redress against a pilot for violation of the Civil Air Regulations, the Civil Aeronautical Administrator may ask one of two remedies:

(1) He may seek to fasten a monetary penalty upon the pilot, or,

(2) He may ask for temporary or permanent suspension of the pilot's license. When the Administrator seeks a monetary penalty, he files suit in the Federal District Court in the District in which the pilot resides. If suspension or revocation of a pilot's license is sought, the Administrator files a petition with the Civil Aeronautics Board asking such sanction. In all cases where the pilot member is charged with violation of the Civil Air Regulation, if requested, the Legal department consults and advises with the member charged. In the event he decides against disposing of the case by compromise, his defense is undertaken at Association expense. The Legal Department handles all cases begun by the Administrator before the Civil Aeronautics Board seeking the suspension or revocation of the pilot's license.

In those suits which are begun by the Administrator in the Federal District Courts around the country which seek monetary penalty, as indicated above, it is necessary for the Legal Department to arrange for local counsel to handle the matter since staff attorneys are not licensed or permitted to practice law in those jurisdictions. The Legal Department does keep in close contact with these local attorneys, advise with them upon the proper course to pursue in preliminary motions, pleadings, etc. When, and if the suit comes to trial, a staff attorney is provided to assist in the presentation of the pilot's case.

Suits Against The Association

Prior to the last Convention numerous suits had been brought against the Association both in Illinois and elsewhere. These suits which sought damages totaling in the thousands of dollars have been successfully defended by the Legal Department (in the Illinois courts, or by out-of-town local lawyers working with and under the Department's supervision). One of these suits has not yet been entirely disposed of. Following is a rundown of the above suits and their disposition: (1) Cartwright Warehouse vs ALPA. Suit for $1000 moving expenses which were unauthorized by the Association. The suit was dismissed. (2) Interstate Service Company vs ALPA. Suit for $1100 for guard service at ALPA building which was unauthorized by the Association. Suit settled and dismissed. (3) R. D. Benell et al vs ALPA et al. Suit to rescind Seniority Arbitration Award. Suit dismissed by agreement. (4) Stanford et al vs ALPA et al. Suit for declaratory judgment to interpret Seniority Award. Suit dismissed by agreement. (5) Klein vs. ALPA. Suit for $10,000 for public relations services unauthorized by the Association. Master-in-Chancery has issued his report recommending dismissal of the suit. The matter is awaiting court action of the Master's recommendations. (6) American Airlines vs ALPA. During the strike of its pilots over the "Eight Hour Rule," American Airlines filed a breach of contract suit against the Association and individual members, asking several million dollars damages. The suit was dismissed by agreement of the parties shortly after the strike ended.

We can report that since the last Convention no suits have been filed against the Association. There is, however, a recent suit brought against the Members of a System Board resulting from a unanimous decision of discharge, which the Association is defending.

CAB Cases

The Legal Department screens all new cases filed in the Civil Aeronautics Board. In all such cases, in which the interests of the pilot employees of the company involved may be in any way affected, the Legal Department files Petitions to Intervene and represents the Association in the case when circumstance demands it. Such cases in-

clude interchange of equipment; personnel or both; certificate renewals; mergers; sales of routes, etc. Following are examples of a few such cases handled since the last Convention:

Docket 6024—North Central—Lake Central Acquisition.
Docket 6447—Flying Tiger—Slick Airways Merger.
Docket 6485—Trans-Texas Airways Certificate Renewal.
Docket 6672—Northwest—Eastern Interchange
Docket 6675—Flight Time Limitations on transcontinental non-stop flights.
Docket 6678—Flying Tiger Line—Petition for Exemption CAR on maximum landing weights.
Docket 6998—Colonial—Eastern Merger.
Docket 7378—Transfer TWA Segment 1 to Route 2.
Docket 7454—Seven States Area Case—Suspension of certain Certificates in certain areas.

Related Duties

In addition to the above functions, the Legal Department performs numerous other duties, some of which are:

- Keeps a current roster of the System Board membership on each air line and informs the President of the Association of the necessity for substitution or annual replacements to these Boards.
- Keeps a current roster of 25 First Pilots and 25 Copilots from among whom selections may be made to an Arbitration Board to settle seniority disputes, within the Association, in merger cases.
- After a merger is approved by the Civil Aeronautics Board, the Legal Department confers with the Seniority Representatives respecting Association procedure for merging the seniority lists, prepares a schedule of procedural steps and monitors the integration to see that the time limitations of each "step" in the process is maintained.
- To a limited degree, the Legal Department performs the same services to affiliate organizations as it renders to the Association. There are six such affiliates: ALSSA, ACCOA, ALAA, ACPA, ACMA, and ACFEA, and the combined membership numbers 10,681.

Accomplishments

Following is a computation of the number of incidents, grievances, Civil Air Regulation violation cases, Civil Aeronautics Board Dockets, and law suits handled by the Legal Department from October 1, 1954, to the date of this report. The grievance cases are broken down into those which reach the System Board level and those processed through the Neutral Arbitrator, which is the last step in the grievance procedure:

Incidents and Grievances

Incident Files Opened	188
Grievance Files Opened	380
Grievance Files Pending	215
Grievances Reaching System Board Level	115
Grievances Reaching Neutral Arbitrator (These figures do not include affiliates.)	6

Degree of Success—All Grievances

Percent of Grievances Won	(105 cases)	63.6%
Percent of Grievances Lost	(60 cases)	36.4%

Degree of Success—System Board Level

Percent of Grievances Won	(61 cases)	50.4%
Percent of Grievances Lost	(60 cases)	49.6%

Discharge Cases

Total Discharges	30
Pending	9
Lost	9
Won	12

Degree of Success

Percent of Discharge Cases Lost	42.9%
Percent of Discharge Cases Won	57.1%

Actual Monetary Recovery For Pilot Membership

Without taking into consideration the tremendous monetary value which accrues to an employee over the years, following his reinstatement after discharge, the Legal Department is responsible for the recovery by the membership of $131,052.03 during the period covered by this report. This figure does not include recoveries made for the affiliate membership.

Civil Air Regulation Violation Cases

Violation Files Opened	14
Violation Cases Compromised	5
Violation Cases Pending	6
Violation Cases Processed to Trial	3
Violation Cases Won at Trial Stage	3

CAB Cases

CAB Case Files Opened	21

To keep pace with the growth of ALPA and its affiliates, the Legal Department has been expanded to include four full-time attorneys, supplemented by outside legal assistance on special projects. It is contemplated that still further expansion will be necessary within the immediate future. The staff attorneys: F. H. Bennett, M. H. Schy, George Archer, J. P. O'Brien. Secretaries: Janet Gorkis, Helen Chi-

ALPA's Legal and Conciliation Department.

pain, Hazel Beckman and Lucille Kandich.

Engineering And Air Safety

The high degree of professional standing achieved by the Air Line Pilots Association in its continuous efforts to improve safety was stated by a neutral in a recent case as follows:

"To a degree unique in American history, the pilot and his organization have participated in planning and in making important decisions in the air line industry along with the managements of the air lines. They have been consulted on new equipment and its functioning, on airport facilities, fire control, safety, engineering and many other matters, which elsewhere would be considered to be primarily within the province of management.

"This consultation has by no means been perfunctory. Plans and programs, which would involve changes in basic working conditions have been held up until approved by the pilot group."

Activities

The work of the Association in the field of air safety has become too broad to effectively catalog. It may be generally stated as:

- Coordination of pilot representation in each council, air line and region for the effective analysis and reporting of safety problems.
- Implementation of the policies of the Association in the field of air safety.
- Participation in industry projects and conferences which seek solution to problems important to the air transportation industry and the air line piloting profession.
- Representation of the pilot viewpoint in the formulation, drafting, or revision of Civil Air Regulations or any other action of municipal, state, federal, or international authority to regulate air commerce.
- Participation in the safety projects of the International Federation of Air Line Pilots Associations and monitoring the actions of the International Civil Aviation Organization.

Organization

Council Air Safety Committees handle problems which concern only the local council and disseminate information to their councils. **Central Air Line Safety Committees,** composed of a representative from each Council Air Safety Committee, handle problems common to more than one council or the entire air line. **Regional Air Safety Committees,** composed of representatives from each air line at a particular domicile, handle local problems requiring the coordination of the ALPA councils at the domicile, i.e. Noise problem in the New York area. Work is going forward to establish pilot accident investigation teams in each region. This is progressing favorably and has proven satisfactory in many instances. **Air Safety Forum**—held annually was approved in 1952 by the Twelfth Convention as a means by which ALPA could exchange views among pilot and industry representatives on mutual air safety problems. ALPA delegates to the Air Safety Forum are Central Air Lines Safety Chairmen and special ALPA representatives on safety problems. All who have participated in the four Forums held to date have expressed great satisfaction in this medium for exchanging views and drawing attention to air safety problems. It has also proved to be an excellent public relations medium.

Technical Talk For Pilots

Believing that pilots may profit from the experiences of others and that it is valuable to exchange experiences, the Association publishes a monthly bulletin entitled *Technical Talk for Pilots.* This bulletin, a recent Association publication, was launched in 1953. It offers for study condensed items of interest purely in the technical and safety field in aviation. Most of these articles are contributed by air line pilots and the Engineering and Air Safety Department.

Whenever specific information from other aviation sources is considered appropriate, it is also used in this bulletin. The bulletin is distributed to over 10,000 air line pilots and other aviation interests.

Special Committees And Meetings

- **Airworthiness Advisory Committee,** composed of Chicago-based pilots who advise on the handling of air safety problems such as CAA draft releases, etc.
- **Airspace Subcommittees** are set up at each CAA regional headquarters. These committees, composed of industry and government agency representatives, consider air space and navigational problems in their area; such as location or alteration of navigational facilities; approval or disapproval of radio tower location and construction; establishment of danger or restricted areas. ALPA is represented by the Regional Air Safety Chairman, or other Association Area Representative.
- **National Air Transport Coordinating Committee** is an industry organization which arose out of the noise problem in the New York area and the series of accidents at Newark for the purpose of coordinating efforts to cope with problems arising from public indignation over aircraft noise and accidents. President Sayen is a member of the three-man Executive Committee which directs the activities of NATCC.
- **National Advisory Committee for Aeronautics-Committee on Operational Problems.** The NACA is the basic aeronautical research agency of the U. S. Government. Research projects are determined by appointees to the various committees. President Sayen is now serving his third term as a member of the committee on operating problems.
- **Civil Aviation Air Defense Advisory Panel** includes ALPA. The committee advises the joint CAA-USAF Air Defense Planning Board. The group issued the SCAT plan for the air defense of the United States which has been released to all ALPA Councils.
- **ALPA-CAA Working Committee on Operational Problems.** This is a group of ALPA representatives made up of Regional Air Safety Chairmen. These representatives meet with top CAA representatives on operational problems in Washington, D. C., periodically.
- **ALPA is represented on a number of Air Coordinating Committee Subcommittees as follows:** (a) Air Traffic Control & Navigation Panel—J. D. Smith; (b) Air Space Rules & Rules of the Air—L. Abel; (c) Aerodrome Air Routes and Ground Aids—E. Cutrell; (d) Search & Rescue—H. Kysor; (e) Airworthiness—L. H. Mouden.
- **National Aviation Noise Reduction Committee** is a group of government and industry aviation organizations which deal with all aspects of the noise problem.
- **Miscellaneous Industry Activities** having ALPA participation: UAL Annual Flight Safety Seminar, Air Line Safety problems discussed; Annual ATA Chief Pilots meeting, Industry Operations Safety problems discussed; Annual Flight Safety Foundation Flight Safety Seminar, J. Lederer, Industry problems discussed; CAB Annual Airworthiness Review, Proposed Airworthiness Regulations discussed; IFALPA Air Safety Conferences—on current subjects; National Business Aircraft Association meeting on Current Industry problems; SAE (S-9) Committee Meetings to standardize Cabin Safety provisions; Meetings with City and State Officials on Airport Safety; Meetings with Military Aviation groups.

Current Projects And Project Chairmen

• Prevention of Inadvertent Propeller Reversing—C. Daudt (AA). Studies have been made of all reversing systems. Recommendations made, many of which are now airworthiness directives. ALPA-recommended reverse pitch indicating light is now mandatory.

• Airworthiness Committee—L. H. Mouden (BNF), Association representative.

• Radar Traffic Control — J. D. Smith (CAP). Pilots' viewpoint is represented as equipment and procedures for radar traffic control are developed and brought into use.

• Radio Technical Commission for Aeronautics. Long range planning and development work in equipment aspects of air traffic control. Implementation of "common system" has ALPA representation in many phases of its work as follows: (a) Executive Committee—C. N. Sayen, Alternate C. E. Beatley. (b) SC-56 Implementation of VHR Utilization and Communication requirements—W. Jensen (AA). (c) SC-63 Helicopter Air Navigation Communications and Traffic Control Study—John Conley (NYA) and Carl Cochran (OZA). (d) SC-64 Radar Safety Beacon Study — W. Jensen (AA). (e) SC-70 Airborne Proximity Indication for Collision Warning Study —R. Stone (UAL). (f) SC-76 Jet Aircraft Operating Procedures—J. D. Smith (CAP).

• Approach and Airport Lighting—E. A. Cutrell (AA), also IFALPA representative to ICAO on this subject. Single row, center-line approach light system has been adopted by ALPA, IFALPA and IATA. Adopted by ICAO as the international standard. Latest development—a revised flush threshold light evaluation is contemplated for meeting military requirements for overrun and undershoot. A satisfactory civil-military standard may be realized.

• Aircraft Exterior Lighting—R. A. Stone (UAL). Regulations have been adopted calling for increasing the flashing rate of navigation lights. Federal regulations have been adopted for anti-collision lights on all civil aircraft over 12,500 pounds.

• Cockpit Standardization—W. Hitt (BNF). J. J. Kelley (EAL) ALPA representative on SAE Cockpit Standardization Committee. Recommended standards are being reviewed on instrument grouping and control movement. An ALPA instrument grouping standard is being given study by the industry.

ALPA's Engineering and Air Safety Department.

• Emergency Evacuation — J. C. Burn (PAA) and Harley Kysor (EAL). The CAB is currently revising ditching procedures at sea as a result of ALPA efforts. Research studies continue to further implement ALPA recommendations.

• Fire Hazards — V. H. Brown (AA), studying failure of various fire warning devices.

• Airport Fire Control—V. Hewes (DAL) and W. Collier (PAA) have surveyed international air line airports fire control facilities. They have contacted airport managers who need to improve their airport fire fighting equipment and procedures. Work is continuing.

• European-Mediterranean Navigational Facilities and Traffic Problems—W. M. Masland (PAA) ALPA and IFALPA representative to ICAO and EUMED problems.

• Cockpit Ventilation and Pressurization—V. A. Peterson (EAL) and George C. Cooke (EAL). Research toward establishment of standards for ventilation in pressurized aircraft. This subject is receiving increased attention by the industry.

• Joint Civil-Military Airport Use Program—Regional Safety Chairman and ALPA Safety Department are following this problem closely at existing and proposed joint use airports.

• ALPA Helicopter Committee—C. Cochran (OZA). A number of industry meetings on Helicopter regulatory matters have been attended and plans for detailed regulation for Transport Helicopter Aircraft will be available for study later.

• Viscount Committee—E. O'Donnell and H. Weigel are continuing to study the Viscount operation problems and have aided in familiarizing the Capital pilots with operation requirements of the Viscounts. Revisions to improve operations have been recommended to both Capital Air Lines and the Vickers Co. The successful Viscount operations record to date is to a great extent attributable to the vigilance of the Capital pilots and their committee representatives.

• Air Traffic Control Committee—J. D. Smith (CAP), Chairman. ALPA is working on all phases of this important industry subject and has been studying this problem for some time. ALPA recommendations for improvement of Air Traffic Control have been formulated by the committee and are being processed through the Board of

Directors. Appearances before Congressional Committees, CAB, General Curtis' White House group and others have been made implementing ALPA's projects in this field.

The above is not intended to be a complete listing of current engineering and air safety projects, but rather to outline the general activities of the Association.

The emphasis in such projects is being placed upon the utilization of pilot specialists as official ALPA spokesmen. The work of the committee is monitored and coordinated by staff members, with the committees and staff members responsible for keeping the membership informed, through Association channels.

To insure pilot participation in arriving at sound recommendations and positions on engineering and air safety matters, the Association has amplified the use of its draft release method and procedure, involving contact with each Local Council through the respective Local Council Air Safety Chairmen.

Trends

▶ Recent evaluation and flight demonstration programs have been completed on the Lockheed 1049G and the DC-7C. Future programs are contemplated on all new air line aircraft.

▶ Increased ALPA helicopter activities is expected. The Civil Air Regulations for helicopter operation are still in a state of flux and much work remains to be done in the establishment of rational standards.

▶ ALPA jet operation and evaluation committees have been formed to assist in the development of air line jet aircraft. ALPA committees have been formed to visit the factories and discuss design and operating problems on the following new aircraft: Boeing 707, Douglas DC-8, Lockheed Electra, Sikorsky S-58, Convair 880, Fokker F-27, DeHavilland Comet IV.

▶ Pilot representatives of each of the air lines purchasing the new aircraft are on the ALPA committees. Factory visits to study mock-ups and meet with aircraft engineers have taken place in the case of the Boeing 707, DC-8 and the Lockheed Electra. The ALPA Boeing 707 evaluation committee has had an opportunity to flight test the aircraft. As other new aircraft development projects reach the flying stage, it is anticipated that the ALPA committees will have an opportunity to take part in flight demonstrations on them also.

▶ During the last two years ALPA's stature in industry work with new aircraft has grown tremendously. There is no reason why ALPA's efforts to represent the active pilots' viewpoint will not continue to be successful in the future.

▶ More and more pilot accident investigation specialists are being recognized as experienced ALPA accident investigators. On this phase of Association activity, President Sayen has asked that pilot committees filing accident investigation reports with the Association, fix "the probable cause" of the accident. Such reports are made to the President and are not released for distribution without his approval.

▶ *Technical Talk for Pilots* has continued to be a worthwhile medium by which the members can contribute their experience and incidents for the benefit of all ALPA members. The Association welcomes contributions for publication from all industry sources and we have found *Technical Talk for Pilots* articles are being quoted more and more by other industry and military publications.

▶ Pilot representation in ICAO through IFALPA is being strengthened and efforts are being continued with ICAO through IFALPA to secure authorization for pilot representatives to participate in accident investigations in foreign countries.

Staff

T. G. Linnert, Department Head; C. F. Eck; T. Basnight (Washington Office). Secretarial: Cecelia Martensen, Donna Lee Krusz.

(Continued in next issue)

Book Review

SENIORITY, SEX, AND SALARY

By Capt. Dave Kuhn — TWA — Price $1.00

Current and choice reading, and a rare bit of wordage that is giving the whole industry a chuckle, is a new booklet, *Seniority, Sex, and Salary*. The author, Captain Dave (Sam) Kuhn, a TWA pilot, is known up and down the line as a tongue-in-cheek character who sometimes takes his tongue out of his cheek and puts it in his typewriter. The result is the satirical essays which comprise *Seniority, Sex, and Salary*.

The book, 40 pages of solid laughs illustrated with 12 cartoons, is liberally sprinkled with Kuhnisms—the art of saying things as only Dave Kuhn can. Some typical Kuhnisms: *On Seniority:* "I have yet to see the 20-year man who wouldn't grudgingly, but willingly, trade a few numbers on the seniority list to recapture the urges of yesteryear." *On Sex:* "Most pilots approach it in much the same manner as they execute an ILS procedure—fast and by the book. Being victims of habit, they are trying to conform to a schedule. It may appear as a contradiction, but pilots' wives do have children." *On flying an airplane:* "If the front end gets there safely, chances are the rest will also." *On liquor aboard aircraft:* "It's un-American; if it's Caviar and Champagne for the few, how's about Bologna and Beer for the many?" *On responsibility:* "While we're turning on the deicers, the dispatchers are turning on the heat, which makes for co-responsibility." *On Golf:* "It's not a game, it's a disease. Nothing is so destructive to the moral fiber of man." *On knots, instead of miles:* "It's a product of lend-lease. We furnish Europe money and materials; they give us conversation and customs. *On jerks:* "They're Tuesday boys—be sure when it's Wednesday, it isn't Tuesday to you." *Of himself:* "I was born July 7, 1907, the 7th son of a 7th son. This has no significance except that I have been aging steadily ever since."

Included in the pages of the book are chapters on: "Seniority, Sex, and Salary," "The Cockpit Overfloweth," "A Trip to the Home Office," "Bartenders and 'B' Girls," "Over the Rockies with the U. S. Mail," "I Wake Up Screaming," "Tied in Knots," "Gray Beards and Apple Cheeks," "One World But Miles Apart," and "Of Men and Mice."

The book is a private printing, published by the author himself. It is, however, available through Ed Modes, ALPA Public Relations Department, 55th Street and Cicero Avenue, Chicago 38, Illinois, at $1.00 per copy. Summing up: recommended reading for any pilot, or anyone else in aviation, interested in getting a chuckle about, and in some cases, on, the industry.

The Legendary Lien Patrol

By W. U. Gray
PAA — Pilot Navigator

When the elements are wild
As a demon's child
That fresh from hell is sent
And the wild waves lash
And the thunders crash
Their mad fury to unvent

When the night is bright
With the lightnings light
From the CB's stacked on high
When the weather's foul
And the wild winds howl
Who carries the mail thru the sky?

Why it's Buckshot Lien
And his flying machine
Who keeps the elements at bay
And steadies the craft
On the storms' great blast
That would but tear the wings away.

That mad monsoon
May menace Rangoon
And Buddha's Burma all but drowned
Who'll not fail
To carry the mail
When the flying fish are on the ground

Or the ice builds high
In the frozen sky
Over the Vancouver Isle
And the williwaw's
Whistles down the draw
Making Juneau's weather vile?

Why it's Captain Lien
And his flying machine
Thru the rock filled skies will zip
To bring the U. S. mail
And the ginger ale
To Fairbanks' frozen strip.

Down in old Hong Kong
They have a song
To praise the God-like Lien
And in a high pitched wail
They tell the tale
When Kowloon's weather is really mean

When Kona winds rise
In the tropic skies
To whip the waters off Makapua
The Kaimenians know
Despite the blow
Buckshot Lien will bring her thru.

When the cross is high
In the southern sky
And the Tasman's sea whipped white
Winds clockwise flow
About a low
That will lash Auckland City tonight

But Buckshot Lien
And his flying machine
Will take the treacherous flight
And the bula boys smile
On Fiji Isle
For they admire this man of might.

His mad motors' roar
Is a challenge to war
Of all the gods that churn the skies
From Nome's cold shore
Down to Singapore
Buckshot Lien will always fly.

But it's a frightening thing
To be on the wing
Whenever the storm gods reign
You're sucked toward the earth
With sadistic mirth
Then boiled back up again

Huge drops of rain
Become balls of flame
That fall from a flaming sky
Lurid halo's crop
About the prop
All hell has moved on high

Then the night will explode
In an episode
Of brilliant burning light
Half blinded eyes —
From the torching skies
Seek to set the plane aright

And some crews say
When the night's that way
And the plane is tossed and spun
The copilots know
When his blue eyes glow
That Lucifer and Lien are one.

So when you're by the fire
And the winds transpire
To rend your house in two
Cast an eye
To the raging sky
For Buckshot will be going thru —

AND SOME FOLKS SAY
WHEN THE SKIES ARE GRAY
AND THE STORM CLOUDS ROLL
YOU CAN HEAR THE STRAIN
OF HIS STURDY PLANE

The Legendary Lien Patrol

The Importance Of Aircraft Ventilation

Fresh, Pure Air Is Necessary To Insure Safety And Health Of The Pilot

By Capt. V. A. Peterson, EAL

Chairman, ALPA Airplane Air Conditioning Committee

Breathing clean, fresh air is generally regarded to be desirable. A person who can do so is more efficient, alert, tires less easily, and is likely to live longer.

Supplying fresh air to unpressurized airplanes through an air inlet in the nose is a cheap and simple way to get needed ventilation. In pressurized machines, the cost is greater since the compressors take considerable power to run and a pressurized system with its coolers, ducting, etc. adds a good deal of weight. The higher the airplane cruises, the more costly it becomes to provide ventilation. Consequently, some expedients adopted have been the Boeing 377 system of filtering and reclaiming used air; the Douglas system which makes efficient use of available fresh air; and the Lockheed idea of recirculation.

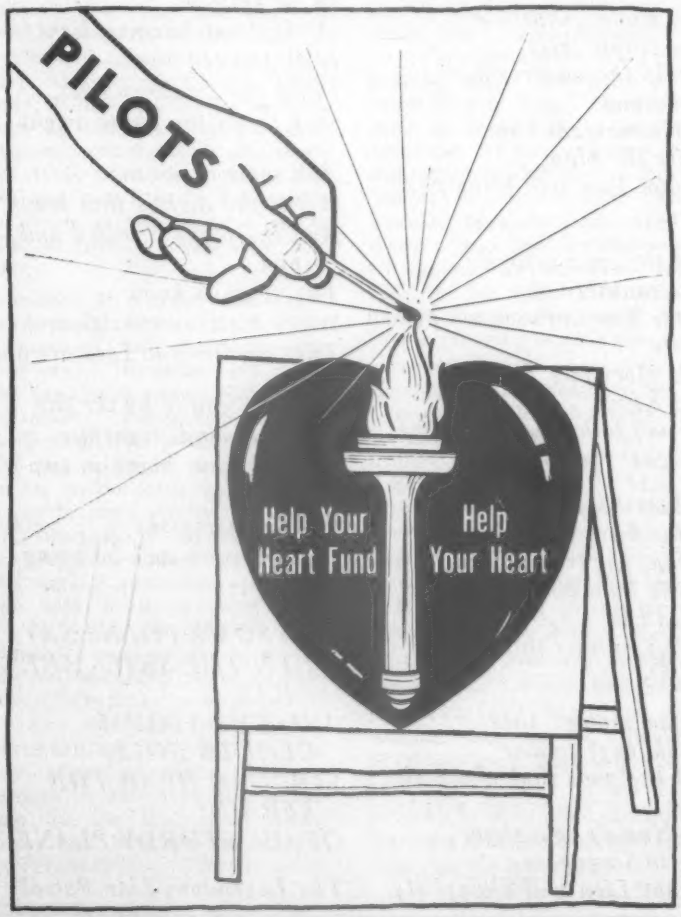
Boeing System Liked

The Boeing 377 system has been well received by pilots. A reasonable amount of air is delivered, the cabin is roomy, a comparatively low-density seating is used, and the cabin can be pressurized enough to allow low cabin altitudes. Douglas has consistently stayed with using fresh air efficiently. Chief pilot complaints have been lack of humidity and difficulty of temperature control. The airflow for high density seating or operation on one supercharger with normal seating appears marginal. With all its shortcomings, it is an excellent system.

The early Lockheeds—up to the 749—have been designed around the use of recirculated air which simplifies heating, cooling, air supply, and engineering the system. Pilot complaints about the quality of the air led to a modification on the 1049 whereby the cockpit was given a separate heater and a choice of fresh or recirculated air. Even with modification, this system can be labeled the least desirable of any large, commonly used transport. Early Convairs which had considerable difficulty with heating and cooling have been modified. So has the Martin 404. Aside from considerations of comfort, the quality of air in both can be best described by the word "fair".

Boeing 707 design was monitored closely by ALPA in the early stages. Their engineers were found to be sympathetic toward designs which consider human needs.

Lockheed Electra design has been evaluated by the American and Eastern Committees. Several recommendations for improvement have been made, chief among which were a request for more fresh air, the abandonment of



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use of recirculation, better smoke removal and a system capable of meeting the needs of high-density seating.

Fresh Air In Cockpit

Now, a few words about the importance of having fresh air in the cockpit. Recent medical research indicates the alarming increase in lung disorders may be due to breathing various products of modern living. Air line pilots can be exposed to a collection of these products during their working hours in an airplane having a pressurizing-ventilating system poorly designed in the first place and then poorly maintained. Often the airplane has been converted to high density seating without an increase in supercharger capacity. The collection of products of modern living in a poorly ventilated pressurized aircraft can include:

- Carbon monoxide, tobacco tars, nicotine and traces of arsenic from cigarette smoke.
- Carbon dioxide—a product of respiration—plus other products of living at altitude.
- Fumes from combustion heaters and heated insulation of electrical equipment.
- Oil vapors from cabin supercharging and cooling system.
- Food odors, body odors and other contaminants of any source.

Long-term effects on pilot health can be evaluated only after many years. However, some insight has been gained into the short-term effects of living in a contaminated atmosphere from published studies on anoxia and from pilot complaints. Among them are fatigue, irritability, loss of visual acuity, mental and physical sluggishness, plus loss of memory for recent events—all of which subtract from the safety of flying.

Air line pilots are guinea pigs when it comes to testing oils over a period of time for cumulative effects, since it is entirely possible that some oil vapors are toxic even when inhaled in small amounts. In this regard, the synthetic oils and those using phosphorous compounds for anti-wear additives should be viewed with suspicion.

To summarize: An adequate supply of fresh, pure air properly conditioned and introduced without excessive draft is necessary to insure the safety of flight and the health of the pilot.

EXECUTIVE FLYING AND THE RETIRED LINE PILOT

By Edward S. Binder

Director Of The Pilots Employment Agency

Teterboro, N. J.—The efficiency of the executive airplane and pilot is making news today all over the nation. A corporate airplane is no longer an item of luxury for only the chairman of the board of only the multi-billion-dollar corporation.

Businessmen of all ranks, in companies of all sizes have come to see by proof of experience, the economic advantages of using company planes that can go anywhere at a moment's notice, can save valuable executive time, and can build customer good-will and respect.

The demand for business flying's efficiency by America's industry and commerce has risen like a missile in the past few years. Now, more than any time in the past, there is a crucial need for **experienced** pilots to provide the kind of professional flying operation that business needs and demands.

One simple question: With all his years of training and experience, who is better suited and qualified to furnish that skill than the retired airline pilot? If you're retired or approaching retirement, we invite you to drop in and talk it over with us any time.

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Picture of John Wise from AMERICAN HERITAGE

The old lady gave him what for

AN OLD LADY living near Henderson, N. Y. in 1859 was shocked at the way the four men had arrived—and said so. Such sensible-looking men in such an outlandish vehicle!

But John Wise and his crew, perched up in a tree, were far too happy to listen. Caught by a storm, their aerial balloon had almost plunged beneath the angry waves of Lake Ontario. Then, after bouncing ashore, they had crashed wildly through a mile of tree-tops before stopping in one.

Now, his poise regained, Wise stood up to proclaim: "Thus ends the greatest balloon voyage ever made." He had come 1200 miles from St. Louis in 19 hours, setting a record unbroken for 60 years.

He had also proved his long-held theory of an earth-circling, west-east air current—and that was far more important to him. For Wise was no carnival balloonist. He was a pioneer scientist of the air, a man whose inquiring mind and courageous spirit helped start the vast forward march of American aviation.

In America's ability to produce such men as John Wise lies the secret of her real wealth. For it is a wealth of human ability that makes our country so strong. And it is this same wealth that makes her Savings Bonds so safe.

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